1 YEAR WARRANTY

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User's Guide

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WMS-T-AL
Dual Set Point Temperature Alarm

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WARNING: These products are not designed for use in, and should not be used for, human applications.

WMS-T-AL Dual Set Point Temperature Alarm

Introduction

The WMS-T-AL is a microprocessor-based dual set point Temperature Alarm packaged in a NEMA 4X box with a transparent cover. It has been designed with two independently controlled relays. The relays are used to control power to the users temperature sensitive device(s) or to operate operator selected secondary alarms. The control module has a liquid crystal digital display and push buttons for viewing and selection of the operating mode and the alarm threshold values. The user can control three parameters for each alarm channel: Threshold delay before the relay triggers after threshold temperature is crossed, and delay time before the relay turns off after the temperature re-crosses the threshold . Each relay can be used in either the normally open or the normally closed mode. A piezoelectric buzzer in the control module can be activated to turn on when ever the alarm state is active.

General Description

The WMS-T-AL consists of two components a temperature sensor to measure temperature and a control module.

TEMPERATURE SENSOR

The temperature sensing probe is based on a precision thermistor and is designed to measure over a wide range of temperatures. The thermistor has a resistance value of 10,000 ohms at 25°C and has a highly reproducible response curve. The sensor accuracy is ±1°F (±0.55°C). Resolution is to 0.1°F (0.05°C). The measurement range is from -40°F (-40°C) to 160°F (60°C). The Alarm range is from -40°F (-3°C) to 160°F (+3°C). The temperature sensor is supplied with a 40 ft. Cable.

CONTROL MODULE

The function of the Control Module is to activate its control relays when ever user selected temperature vales are reached and sustained for user determined periods of time. The Control Module is microprocessor based and is controlled via push buttons and a two-row-liquid-crystal-display. There are Option Switches on the printed circuit board for selection of temperature units (°F or °C) , for enabling the audible alarm, and a potentiometer for controlling the LCD contrast.

User Interface

There are two modes of operation for the model WMS-T-AL Temperature Alarm. RUNNING and PAUSED. The RUNNING mode is the normal operating mode when the unit is initially powered up. The PAUSED mode is any state other than the normal OPERATING mode. Pressing any button during the RUNNING mode will place the unit in the PAUSED mode.

MENU STRUCTURE

The user interface contains the following menu items:

- Temperature Alarms
- Alarm Delays
- Maximum/Minimum Temperature

The MENU Button

The MENU button will take the unit out of the RUNNING mode and allow the user to change the operating parameters and view maximum values.

Once the MENU button has been pressed the user may use the UP and DOWN buttons to scroll through the menu.

Subsequent presses of the MENU button will bounce the cursor between editable fields of any menu item, where applicable. When in an editable field, the cursor will become a blinking block.

The GO Button

The GO Button always returns the unit to the RUNNING mode, regardless of where the user may be in the menu structure.

The UP and DOWN Buttons

The UP and DOWN buttons control either of two things:

1. Scrolling through menu items when the user is not in an editable field.
2. Scrolling through user selectable values when the user is in an editable field.

The CLEAR Button

Pressing the CLEAR button performs the following actions:

1. If the user is in an editable field, the field will be set to 0.
2. It the user is viewing the maximum/minimum temperature value, the recorded value will be cleared.
3. If the unit is alarming, all delay counters will be cleared.

ALARM Features

The WMS-T-AL Temperature Alarm provides the following alarm features:

- Two independent temperature alarms
- Programmable On and OFF delays
- Pausing of alarm when any key is pressed

- When audible, Alarm 1 will produce a beep at 400 ms intervals while Alarm 2 will beep at 200 ms intervals.
- When the alarms are in the audible mode and both alarms are active, Alarm 2 will have precedence.
- The alarm can be put into the silent mode by moving Switch 4 to the off position on the switch block at the bottom of the circuit board. It is necessary to re-boot the WMS-T-AL after moving the switch in order to in able the change.

Units of Measure

It is possible to display temperature values in either °F or °C units. Selection of the unit system to be used is done with Switch 3 on the switch block at the bottom of the circuit board. The Off position is for °F and the On position is for °C. It is necessary to re-boot the WMS-T-AL after moving the switch in order to in able the change.

Temperature Sensor Placement

The validity of temperature signals can be compromised by the choice of the location of the anemometer with respect to the surrounding terrain. Placement of the temperature sensor should follow standards established by agencies such as the World Meteorological Organization (WMO) and the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS).

Temperature Inputs

The temperature inputs are P17, TMP1 and P18, TMP2.

Power Supply

Use a 12V AC or DC power supply on the **ACin/DCin** and **ACin/DCgnd** terminals.

Earth Ground

Attach a wire of at least 18 AWG or larger to the **EARTH** terminal. The other end of this wire must be attached to a metal water pipe or a copper-ground-rod. This is the ground path for all of the lightning and electrostatic protection devices incorporated on the WMS-T-AL circuit board. It is very important that this earth ground connection is made! Your WARRANTY may be voided if the earth ground connection is not made.

QUICK START

Before permanently installing the WMS-T-AL it is advisable to "bench test" it to gain familiarity with its operation. The test is conducted in the following manner.

Attach the temperature sensor leads to the terminals on the WMS-T-AL circuit board labeled **TMP1** and **TMP2**.

Attach 12V dc or ac to the terminals on the WMS-T-AL circuit board marked **AC in/DC** in and **AC in/DC gnd**.

When the WMS-T-AL circuit board is energized the LCD is activated and it will display the temperature on the first line and the alarm set point values on the second line.

There are five control buttons next to the LCD. These are used to set the alarm thresholds for the two alarms, to set the delay times between the time that the temperature crosses the alarm threshold and when the alarm state changes conditions, and to clear the maximum and minimum temperature value in the temperature log. The default condition for the temperature alarms is 75°F.
Both the on-delay and the off-delay default values are 15 seconds.

To change the temperature alarm threshold value press the **Menu** button. The top line of the display will change from "Temp XX.X (°F)" to "Temp Alarms (°F)". Press the **Menu** button again and the cursor moves over the Alarm 1 temperature value. Press the **Up** or **Dn** button to increment or decrement the alarm threshold value for Alarm 1. Press the **Go** button to return to the RUNNING mode. Repeat the process for Alarm 2.

To Change the Alarm On and Alarm Off delays, with the unit in the RUNNING mode press the **Menu** then press the **Up** button until the "Alarm Delays (s)" menu appears. Press the **Menu** button and the cursor will move to the "ON: XX" field. Then Press the **Up** or **Dn** button to increment or decrement the On delay value to the desired value. Press the **Menu** button again to advance the cursor to the "OFF: XX" field and adjust the value with the **Up** or **Dn** button. Press the **Go** button to return to the RUNNING mode.

To view the Minimum and Maximum Temperature registers from the RUNNING mode press the **Menu** button, then press the **Up** button until the "Temps (°F)" screen is displayed and the second line will show the minimum and maximum temperatures obtained since the last reset. To reset the maximum wind speed value to zero press the **Clr** button. Press the Go button to return to the RUNNING mode.

This concludes the series of quick start tests.

SPECIFICATIONS

Sensor Unit

	Sensor	Thermistor, 10K ohms Accuracy: ±1°F @ 77°F
Alarm Delay Range ON or Off		0 - 99 seconds
Controls	Four, push buttons select: 1. Run or Pause mode 2. Menu Select 3. Increment 4. Decrement Option slide switch: (Switches are read only during power-up.) Switch 1: ON = TEMPERATURE Switch 2: N.A Switch 3: ON = °C; OFF = °F Switch 4: ON = Audible alarms, OFF = Silent alarms	

NOTES:

MADE IN USA

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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